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DEFINITION OF TERMS.

A **Solid** is a magnitude which has length, breadth and thickness.

A **Surface** is the whole outside of a thing; it has length and breadth, but no thickness.

A **Plane Surface,** or simply a **Plane,** is a surface without elevations or depressions.

A **Face** is a limited part of a surface inclosed by lines.

A **Line** has length, but no breadth or thickness.

A **Point** has position, without magnitude.

CLASSES OF LINES.

There are two classes of lines, *straight* and *curved.*

A **Straight Line** is one which does not change its direction at any point.

The word *line* is frequently used to designate a straight line.

A **Curved Line** is one which continually changes its direction.

The word *curve* is frequently used to designate a curved line.

POSITION OF LINES.

Horizontal.—A horizontal line is a straight line, parallel to the plane of the horizon; on a level.

Vertical.—A vertical line is a straight line, perpendicular to the plane of the horizon; upright, plumb.

Oblique.—An oblique line is a straight line which is neither horizontal nor vertical.

RELATION OF LINES.

Parallel.—Lines are parallel when they are equally distant from each other at all points. The lines may be either straight or curved.

Perpendicular.—Two lines are perpendicular to each other when they form right angles or square corners.

ANGLES.

An **Angle** is the difference in the direction of two lines which meet at a point.

The point of meeting is called the *vertex* of the angle; and the lines are called the *sides* of the angle.

A **Right Angle** is one which is formed by two lines perpendicular to each other; an angle of 90°.

An **Acute Angle** is one which is less than a right angle.

An **Obtuse Angle** is one which is greater than a right angle.

PLANE FIGURES.

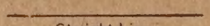
A **Plane Figure** is a portion of a plane bounded by straight or curved lines.

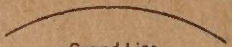
When the lines bounding the plane figure are straight lines, it is called a Rectilinear Plane Figure; when curved, a Curvilinear Plane Figure.

RECTILINEAR PLANE FIGURES.

TRIANGLES.

A **Triangle** is a plane figure bounded by three straight lines and containing three angles.


Straight Line.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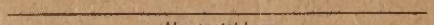
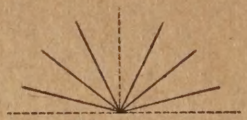
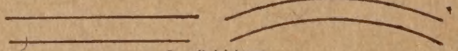
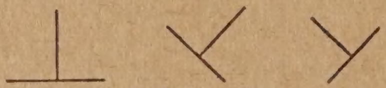

Horizontal Line.

Vertical Line.


Oblique Lines.


Parallel Lines.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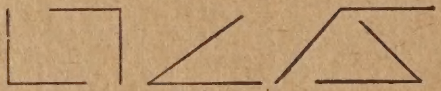
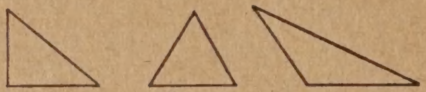
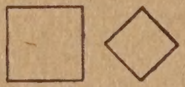

Angles.


Triangles.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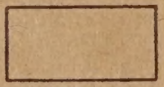
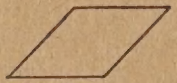
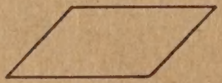
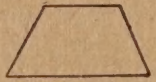
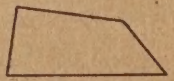
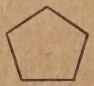

Rectangle.

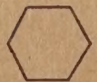

Rhombus.

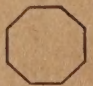

Rhomboid.


Trapezoid.


Trapezium.


Pentagon.


Hexagon.


Octagon.

Triangles are classified with reference to their sides or their angles.

Relative to their sides, triangles are **equilateral, isosceles** or **scalene.**

Relative to their angles, triangles are **right-angled, acute-angled** or **obtuse-angled.**

An **Equilateral Triangle** is one which has its three sides equal.

An **Isosceles Triangle** is one which has two of its sides equal.

A **Scalene Triangle** is one which has no two of its sides equal.

A **Right-angled Triangle** is one which has one right angle.

A **Acute-angled Triangle** is one which has all its angles acute.

An **Obtuse-angled Triangle** is one which has one obtuse angle.

QUADRILATERALS.

A **Quadrilateral** is a plane figure bounded by four straight lines and containing four angles.

Quadrilaterals are of three kinds: **Parallelogram, Trapezium, Trapezoid.**

A **Parallelogram** is a quadrilateral which has its opposite sides parallel and equal.

Parallelograms are of four kinds: the **Square;** the **Rectangle** or **Oblong;** the **Rhombus;** the **Rhomboid.**

A **Square** is a plane figure having four equal sides and four right angles.

A **Rectangle** or **Oblong** is a plane figure having its opposite sides equal and four right angles.

A **Rhombus** is a plane figure having four equal sides, but only its opposite angles equal; two of the angles being obtuse and two acute.

A **Rhomboid** is a plane figure having only its opposite sides equal; two of its angles being obtuse, two acute.

A **Trapezoid** is a plane figure having four sides, but only two of its sides parallel.

A **Trapezium** is a plane figure having four sides, but not two of its sides parallel.

POLYGONS.

A **Polygon** is a plane figure bounded by more than four straight lines.

A polygon which has equal sides and equal angles is called a *regular polygon.*

A **Regular Pentagon** is a plane figure which has five equal sides and angles.

A **Regular Hexagon** is a plane figure which has six equal sides and angles.

A **Regular Octagon** is a plane figure which has eight equal sides and angles.

DETAILS OF RECTILINEAR PLANE FIGURES.

The **Diameter of a Square** is a straight line passing through the center of the square, parallel with two of its sides.

The **Diagonal of a Square** is a straight line connecting two opposite angles of the square.

The **Base** of a rectilinear plane figure is the line on which it is supposed to stand.

The **Bases** of a trapezoid are the parallel sides.

The **Base** of an isosceles triangle is usually that side which is not equal to either of the other sides.

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ALTGELD HALL

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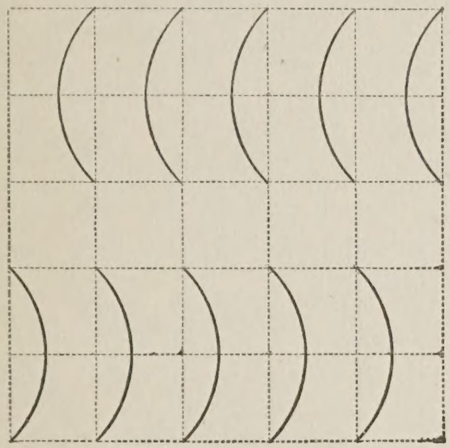
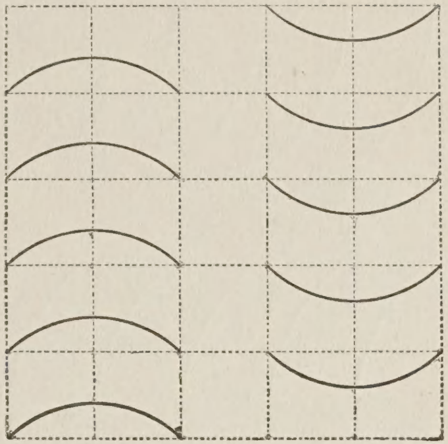
THE CURVED LINE.

A *curved* line is one whose direction changes at every point. The distinction between *straight* and *curved* lines may be illustrated by drawings on the blackboard and by objects in the room. Teach also curved lines from the round face of a cylinder or hemisphere. Explain that the outline of a face of the cylinder, or any part of the same, is called a *simple* curve.

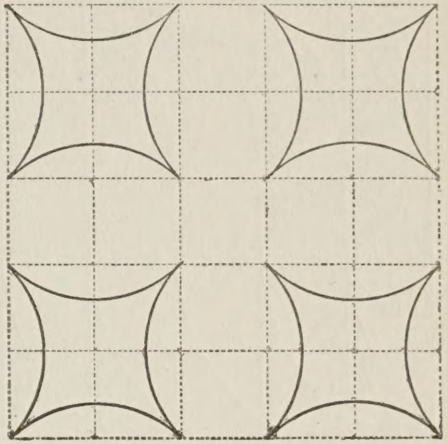
Exercise I.



Exercise II.



Exercise III.



Exercise I.—Simple curves in vertical position. The curves in this example should be drawn, like a straight vertical line, with a downward stroke.

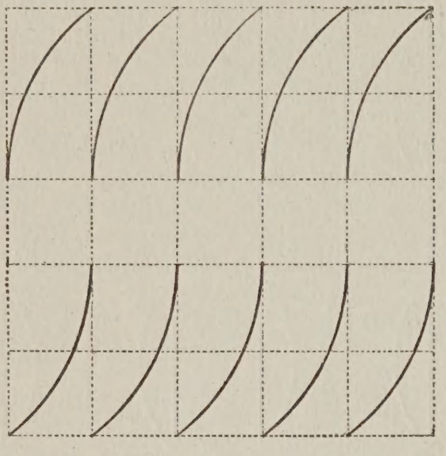
Exercise II.—Simple curves in horizontal position. These curves should be drawn, like a straight horizontal line, from left to right with one movement of the hand.

Exercise III.—Application of simple curves. Do not turn the book in drawing the curves in this example. The long edge of the book should be kept nearly parallel with the front edge of the desk.

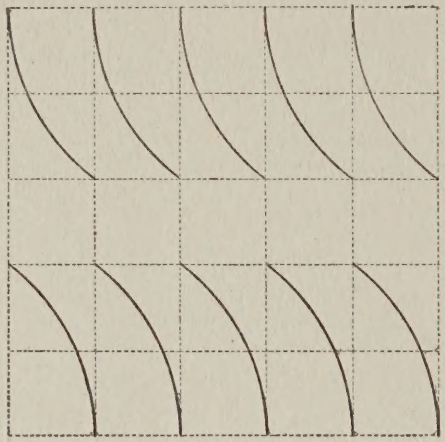
SIMPLE CURVES AND APPLICATION.

Curves in oblique position.

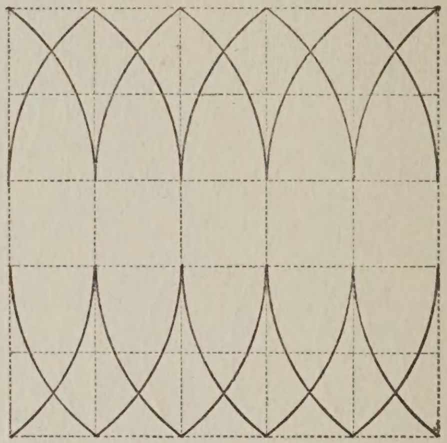
Exercise I.



Exercise II.



Exercise III.



All curves in the examples on this page should be drawn with a downward stroke. Sketch lightly with a free, easy movement of the hand. In drawing the lines in Exercise II., place your fore-arm further up on the desk, so that the pencil may conveniently be held at right angles to the line.

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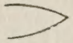
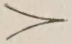
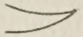
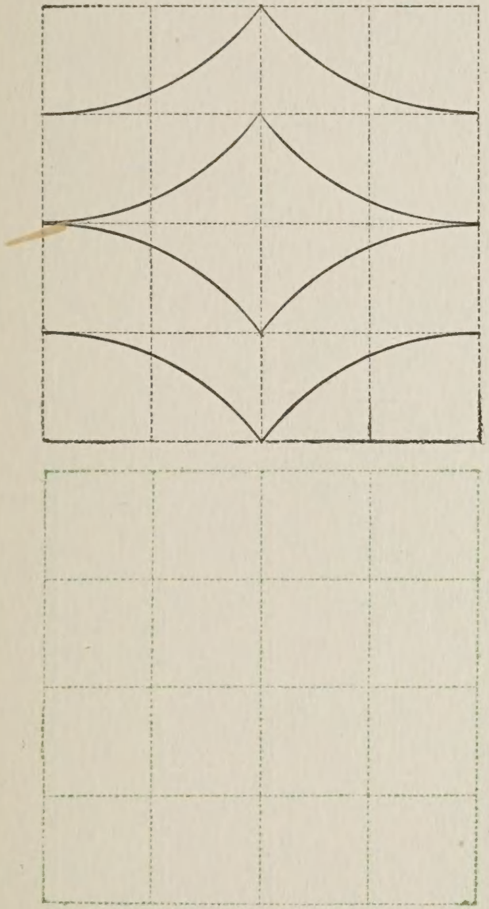
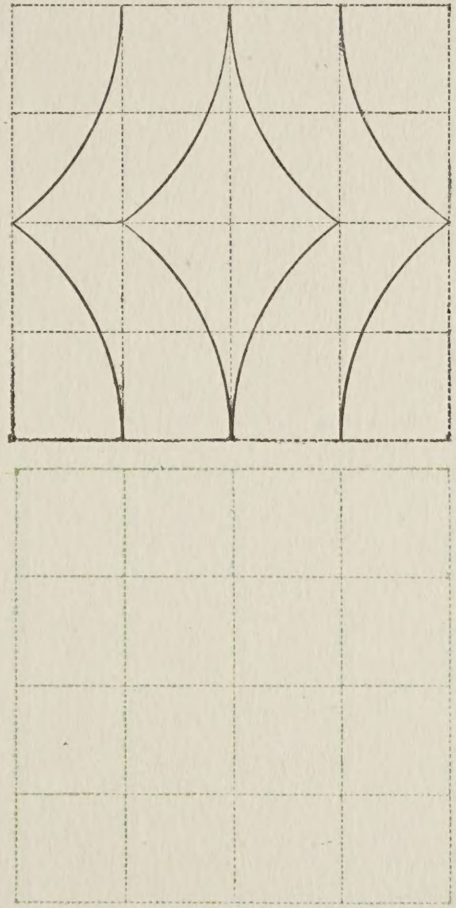
Curvilinear Angles.—A curvilinear angle is one formed by two curved lines meeting at a point. There are three kinds of curvilinear angles: *Concave, convex, concavo-convex.*

A *concave angle* is formed between the *concave* sides of two curves  A *convex angle* is formed between the *convex* sides of two curves  A *concavo-convex* angle is formed between the *concave* side of one and the *convex* side of another curve 

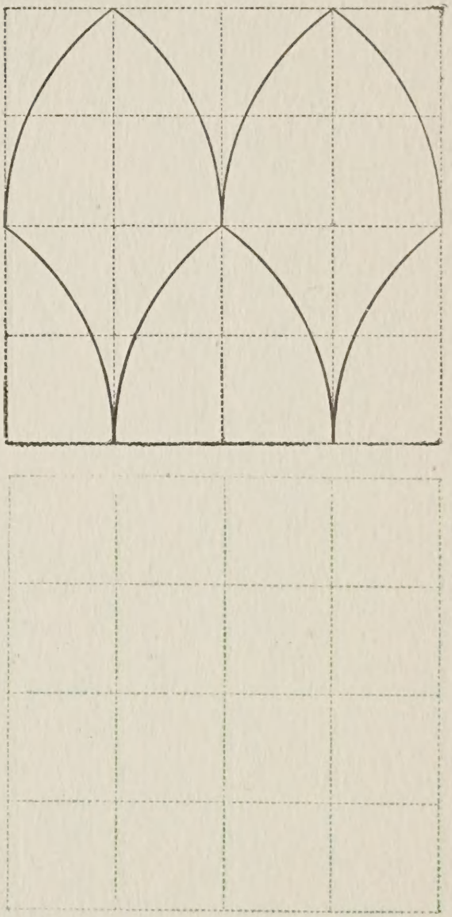
Exercise I.



Exercise II.



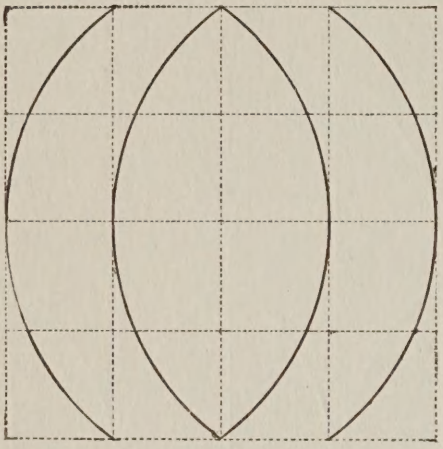
Exercise III.



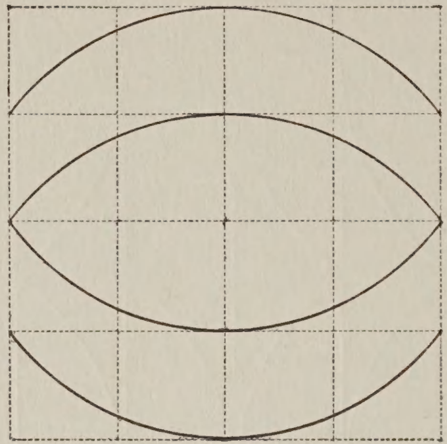
Exercise I.—Convex Angles. The two upper lines at the left and the two lower lines at the right may be sketched with an upward stroke.
Exercise II.—Convex Angles. Use the downward stroke.
Exercise III.—Application of all three kinds of angles.

Tangent Curves.—Curves are *tangent* when they touch, without cutting each other. The point of meeting is called the point of contact.

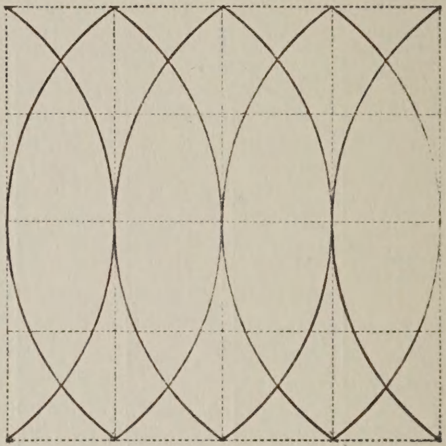
Exercise I.



Exercise II.



Exercise III.



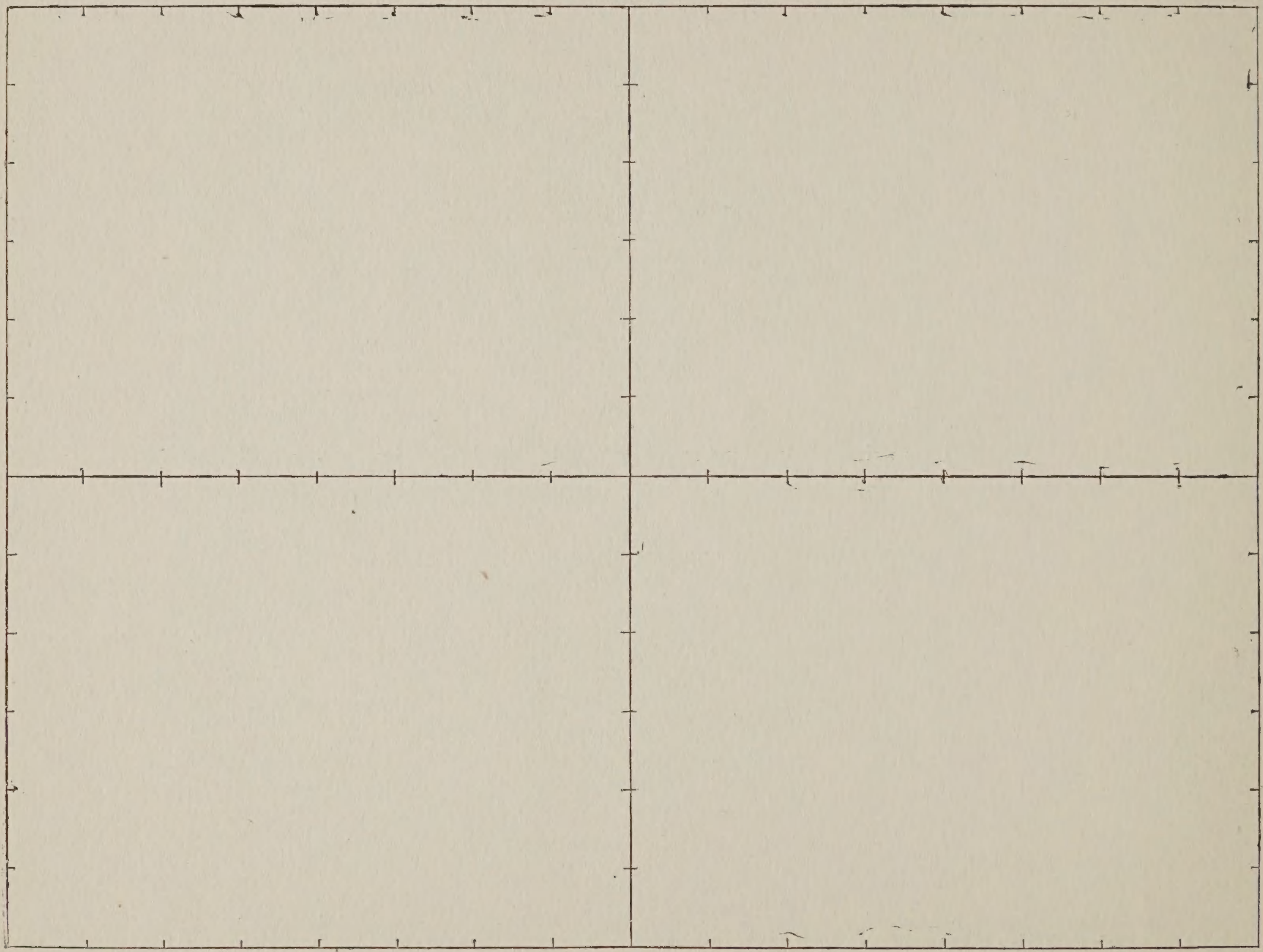
Be careful in sketching Exercise III. that the tangent curves do not cut each other at the points of meeting.

In the space below place points ½ inch apart in a horizontal row, beginning ½ inch from top of space. Make a similar row ½ inch from bottom of space. Draw simple curves in vertical position, curving toward the left.

In the space below place points ½ inch apart in a vertical row, beginning ½ inch from left side of space. Make a similar row on the right side. Draw simple curves in horizontal position, curving upward.

In the space above place points ½ inch apart in a horizontal row, beginning ½ inch from top of space. Make a similar row ½ inch from bottom of space. Draw simple curves in vertical position, curving toward the right.

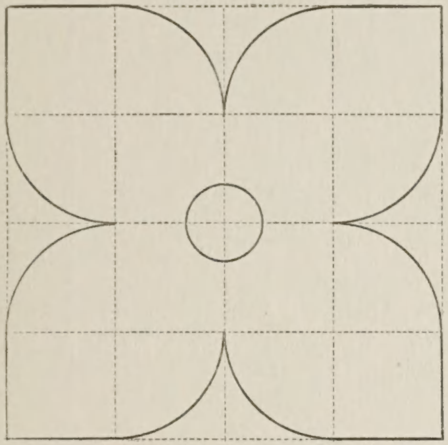
In the space above place points ½ inch apart in a vertical row, beginning ½ inch from left side of space. Make a similar row on the right side. Draw simple curves in horizontal position, curving downward.



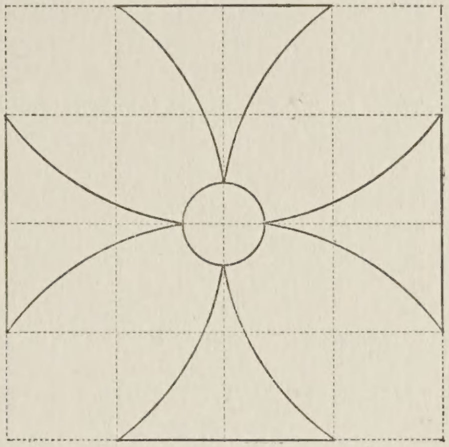
REPETITION AROUND A CENTER.

Repetition around a center is formed when the same ornamental figure is regularly repeated around a center.

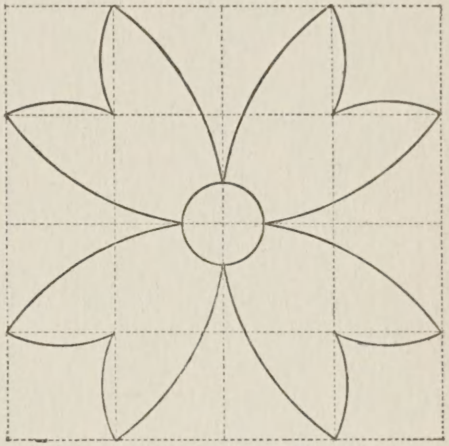
Exercise I.

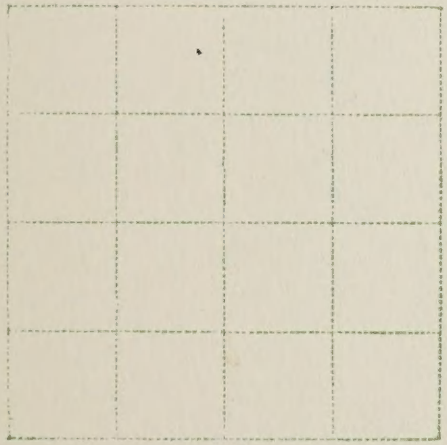


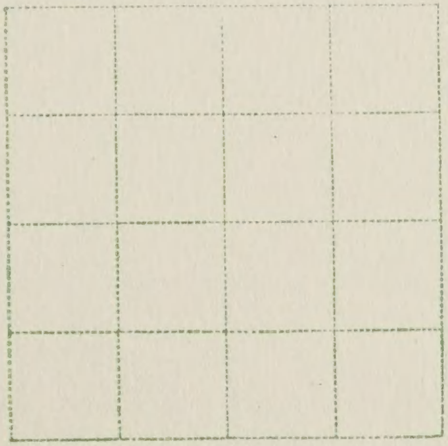
Exercise II.

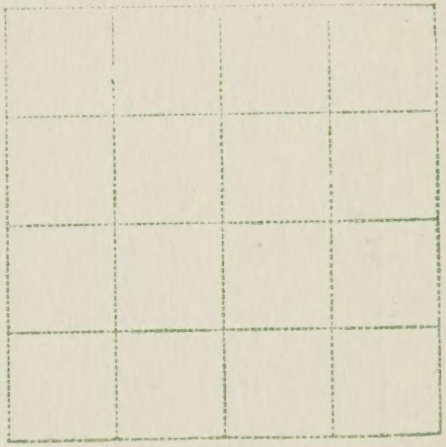


Exercise III.







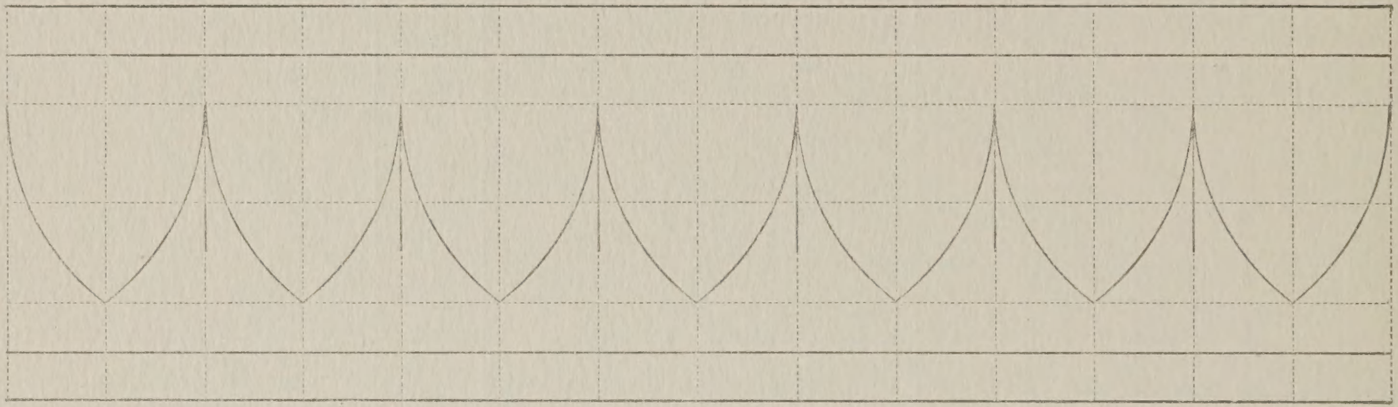


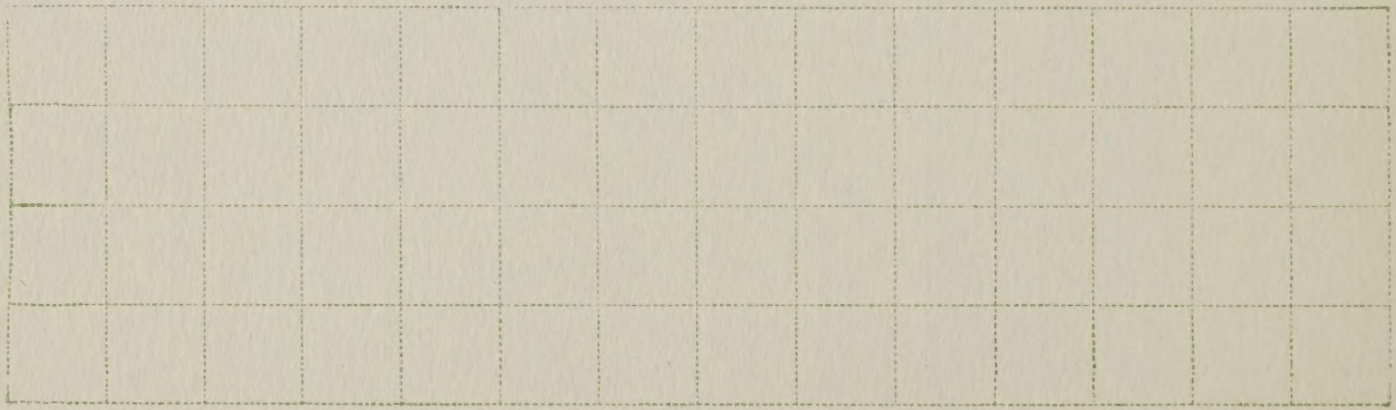
Exercise I.—This is a figure in which the curve unites with the straight line. In lining in, care must be taken to draw the curve so that it will flow gradually into the straight line, forming an unbroken line of easy sweep.

In Exercises II. and III. sketch the central figure first; then sketch the longer curves and complete. Line in.

ALTERNATION, STRAIGHT AND CURVED LINES IN A BORDER.

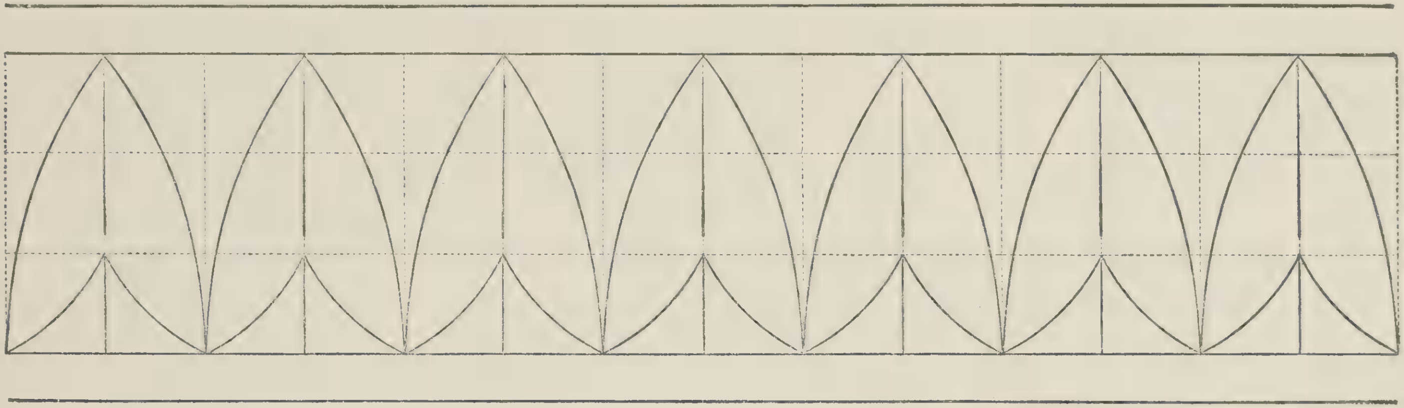
Alternation is formed when two or more units are repeated by turns in regular succession.





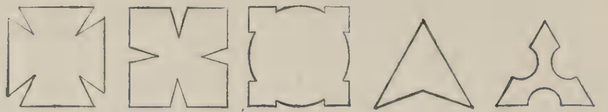
Use a ruler in drawing the long horizontal lines. **Do not make the curves too flat.**

What are the curvilinear angles in this figure called?



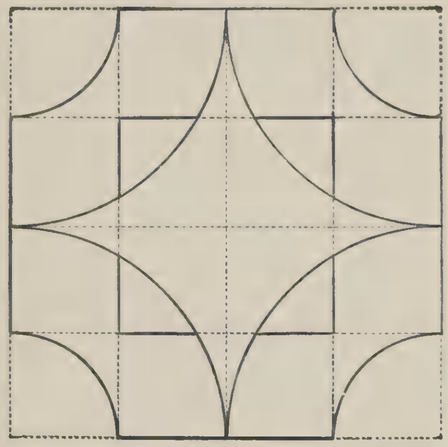
Sketch the longer curves of each leaf first. Then sketch the smaller curves, and, lastly, the stem and mid-rib. Notice that the lines representing the mid-ribs gradually decrease in strength.

Modified Squares.—Squares and other geometric forms are called modified when their outlines are changed without destroying their general shape.

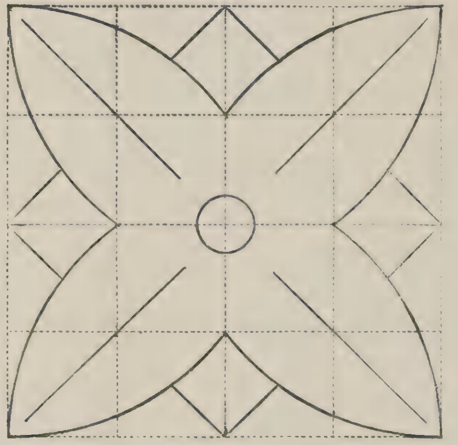


MODIFIED SQUARES AND TRIANGLES.

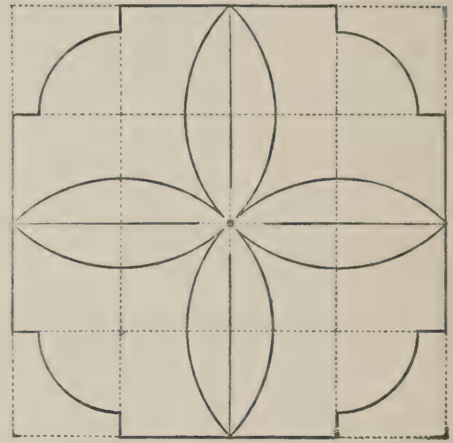
Exercise I.



Exercise II.



Exercise III.



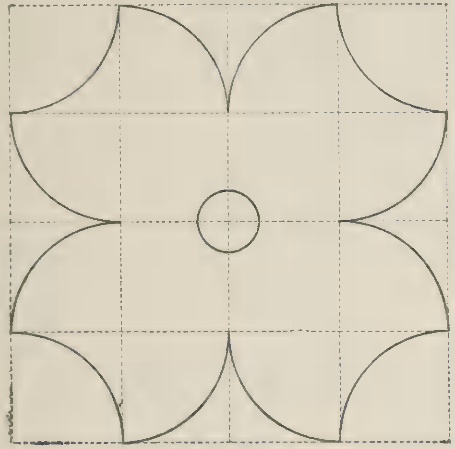
Exercise I.—Sketch the enclosing square. Sketch the inner square complete. Place points in the sides of the square through which the long curves pass. Sketch the curves. Make the convex angles sharp and clean. Notice that the curves on each side of the figure are parallel.

Exercise II.—Sketch the diagonals of the outer square. Sketch the inscribed square complete. Locate points through which the curves pass. Sketch the curves and line in.

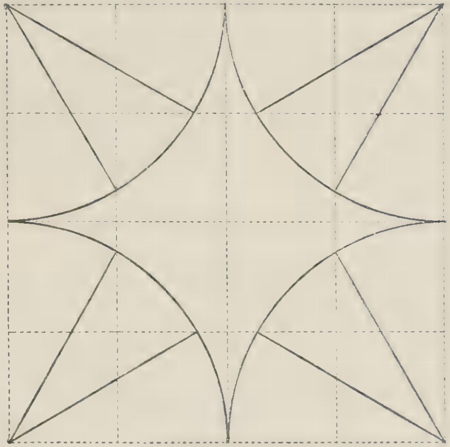
Exercise III.—Repetition around a center. Modify each corner of the enclosing square as shown in design. Sketch the diameters of the square. Place points on the sides of the dotted squares through which the curves are to pass and complete.

The forms given on this page are suitable to be used as *units* for repetition over a surface.

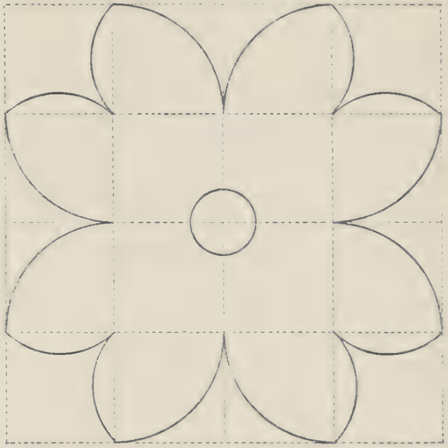
Exercise I.



Exercise II.



Exercise III.

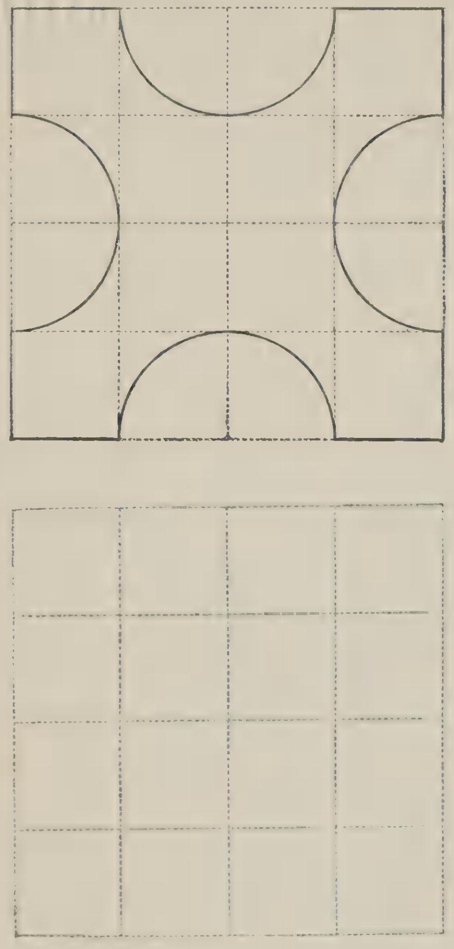


In sketching the figures on this page proceed as in similar exercises. In Exercise II. sketch the straight lines, forming the four-pointed star, last.

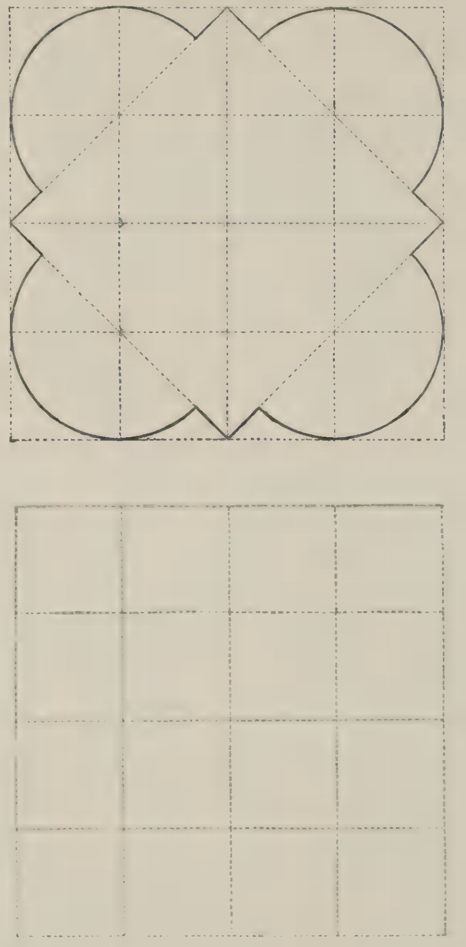
MODIFIED SQUARES AND QUARTERFOILS.

A quarterfoil is an ornamental figure, having four foils or leaves.

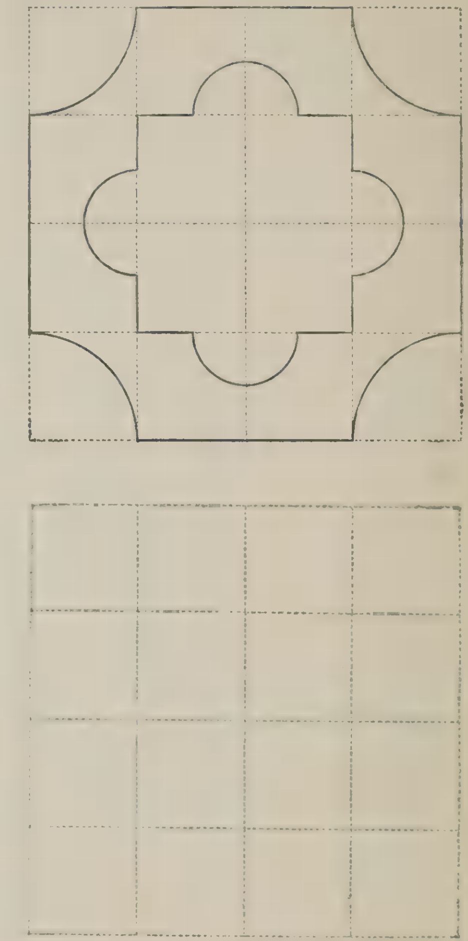
Exercise I.



Exercise II.



Exercise III.



Exercise I.—A *Reel.* Sketch the four square corners first.

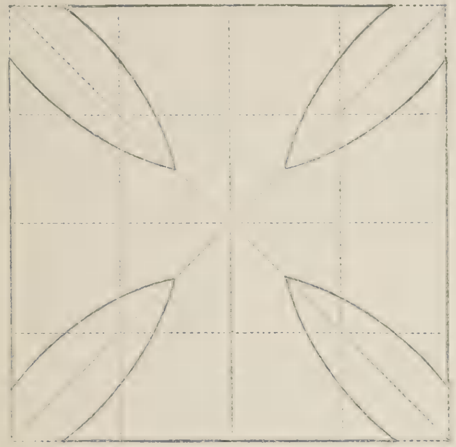
Exercise II.—*Quarterfoil.* Sketch the oblique square complete, as indicated by dotted lines. Sketch curves representing the leaves of the quarterfoil. Erase guide-lines and line in carefully.

Exercise III.—*Quarterfoil in Modified Square.* Sketch the outer form first. Then sketch the inner square complete. Bisect each half of each side and sketch the leaves of the quarterfoil. Line in.

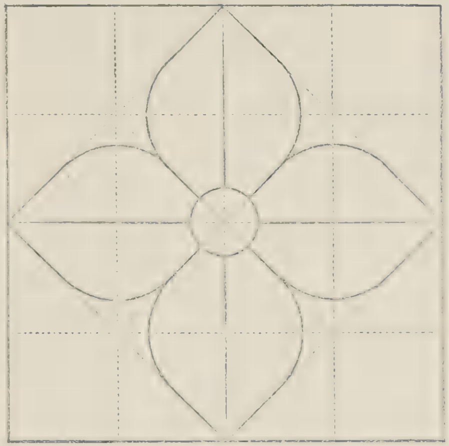
REVIEW OF CURVILINEAR ANGLES.

Let pupils point out four *concave* angles in Exercise I. Also four *concave* and four *convex* angles in Exercise III.

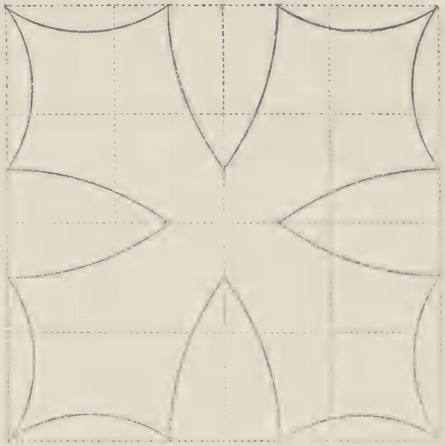
Exercise I.



Exercise II.



Exercise III.



Exercise I.—*Maltese Cross.* Sketch the diagonals of the outer square. Bisect the outer sides of the small squares forming the corners of the large square. Bisect the diagonals of the four inner small squares. Sketch the curves and complete. Use the downward stroke in sketching the curves.

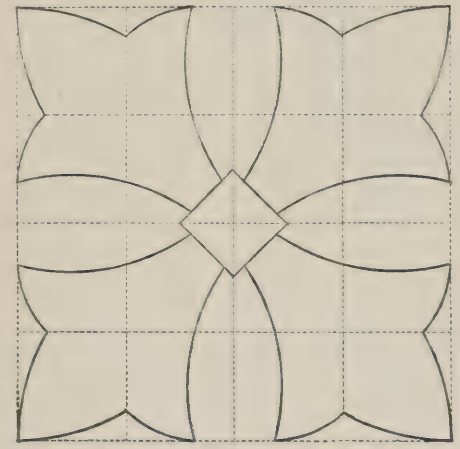
Exercise II.—*Fourfold Repetition Around a Center.* Sketch the outer square. Sketch the inscribed square as indicated by dotted lines, and its diameters and diagonals. Sketch the central figure. Complete as shown in design.

Exercise III.—*Ornamental Cross.* Place the leading points in the outline of the cross. Sketch the oblique curves. Sketch the horizontal and vertical curves. Line in carefully.

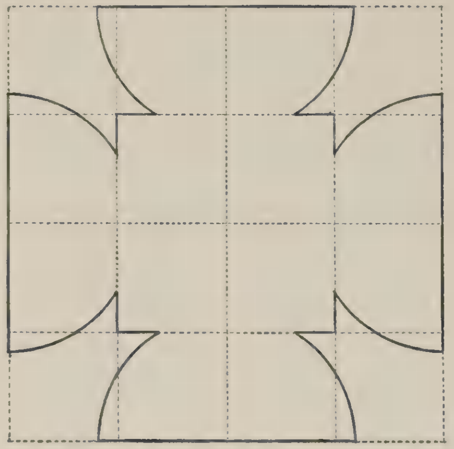
REPETITION AROUND A CENTER.

Repetitions around a center should have a central figure to hold the units together.

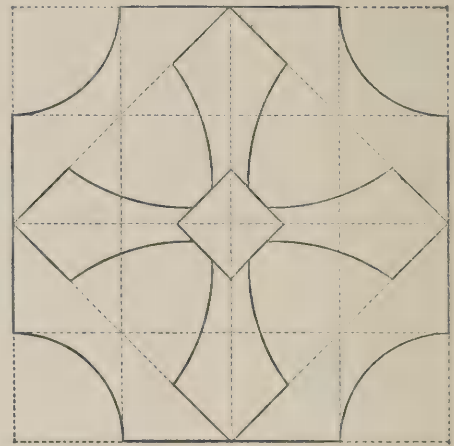
Exercise I.

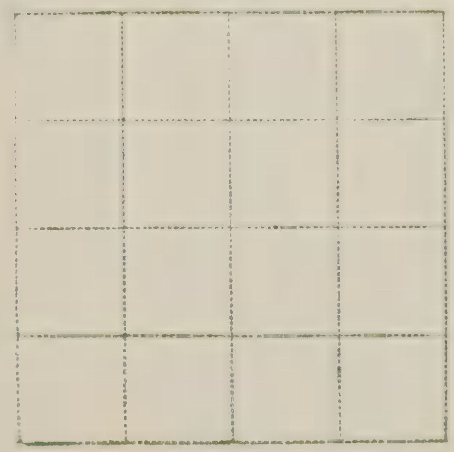


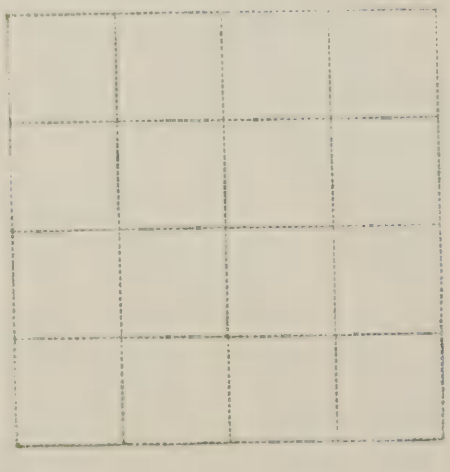
Exercise II.

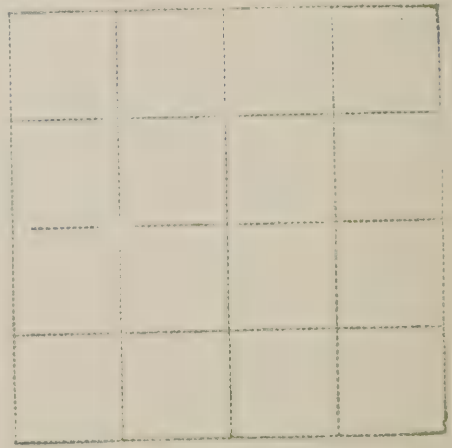


Exercise III.









Exercise I.—Sketch central form first. Locate points for the outlines of the units, and complete.

Exercise II.—Sketch the inner square complete. Place points for the curves, and complete. Line in.

Exercise III.—Sketch the outer square. Sketch the inner square as indicated by dotted lines. Sketch the central square. Trisect each side of the central square. Bisect each half of each side of the inscribed square. Sketch the curves. Line in carefully.

Note.—Trisecting is dividing a line into three equal parts.

In space at left make a memory drawing of Exercise I. on page 10. Make your square 2 inches on a side.

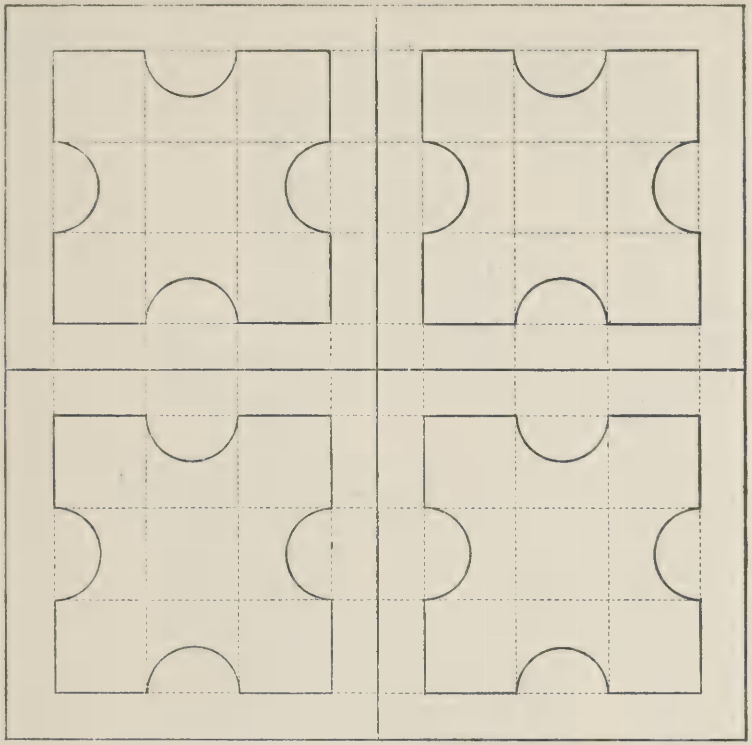
In space at right make an enlarged copy of one of the modified squares given in small illustrations on page 10.

In space at left make a drawing of a quarterfoil upon square. Make your square 1½ inch on a side.

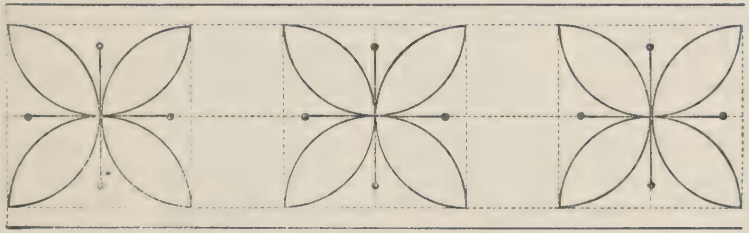
In space at right make a four-fold repetition around a center, or a drawing from a dictation given by the teacher.

A *Surface Pattern* is a design in which the unit is repeated indefinitely in any direction over a surface. Surface patterns are found in carpeting, tiling, paper-hangings, etc.

Exercise I.



Exercise II.

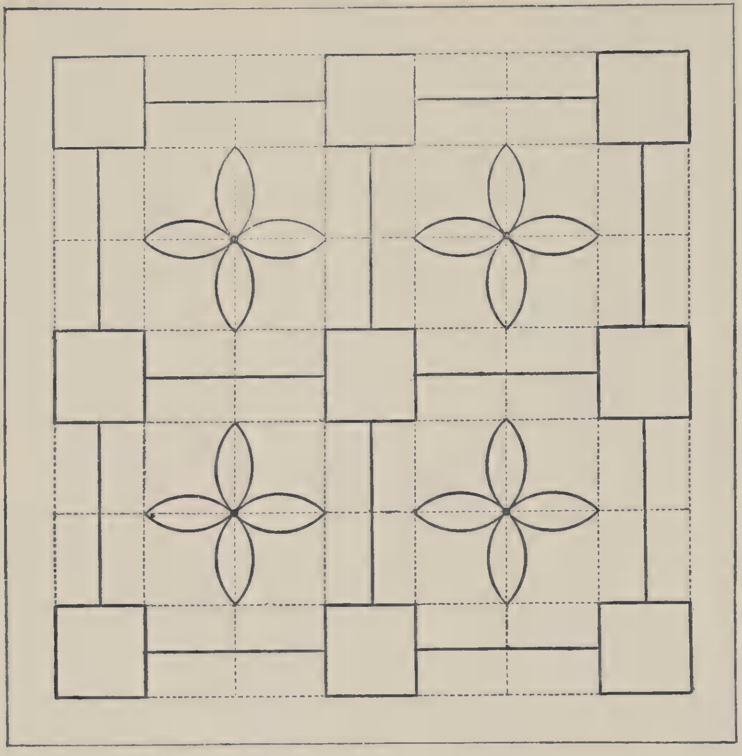


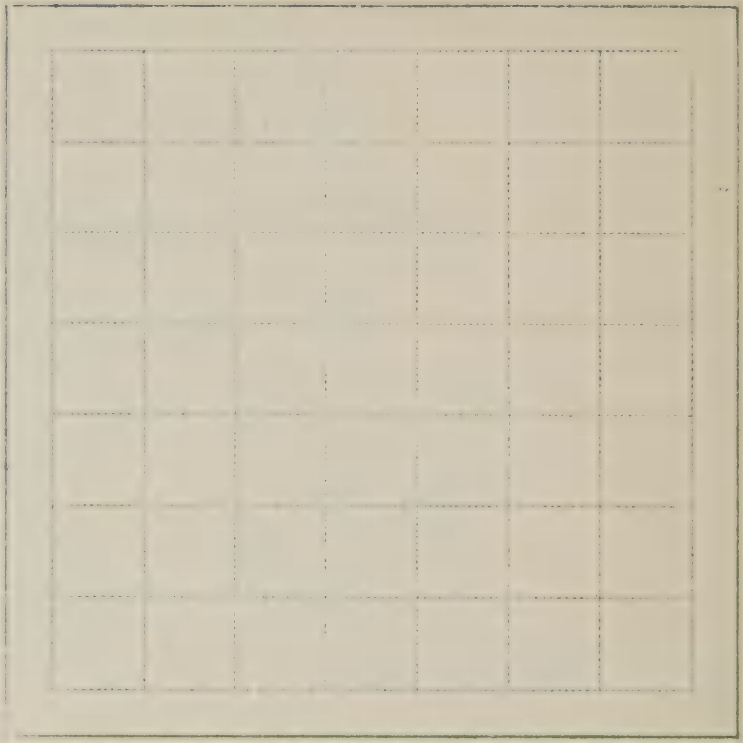
Exercise I.—*Surface Pattern.* Sketch the outer square and its diameters. Sketch the units, beginning in the upper left-hand corner. The figure to be drawn is that given in Exercise I., page 10.

Exercise II.—*Repetition in a Border.* Sketch the curves not too flat. Make the horizontal and vertical lines, representing the stamens of the flower, last. Line in carefully.

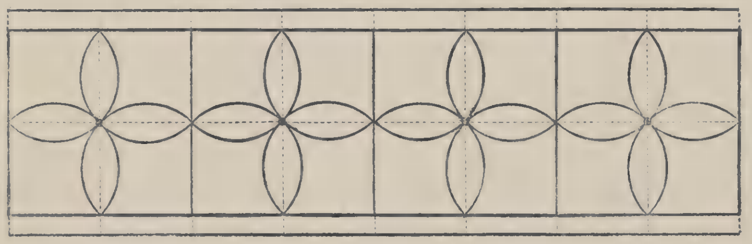
The upper figure is a *Surface Pattern;* the lower, a *Horizontal Border.* The same unit is repeated in both figures.

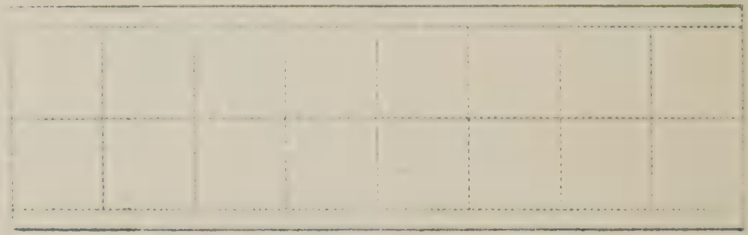
Exercise I.





Exercise II.

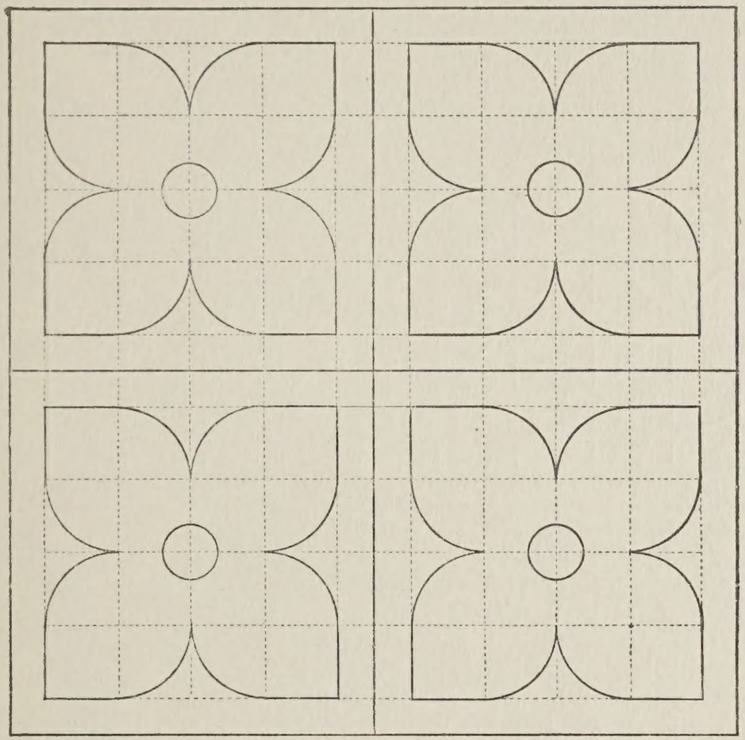




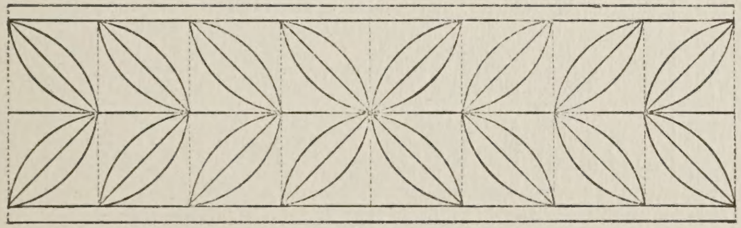
Exercise I.—*Surface Pattern.* Sketch the small squares. Sketch the longer horizontal and vertical lines forming the sides of the larger squares. Sketch the units carefully and line in.

Exercise II.—Sketch the horizontal lines. Sketch the vertical lines. Sketch the units of design. Line in.

Exercise I.



Exercise II.

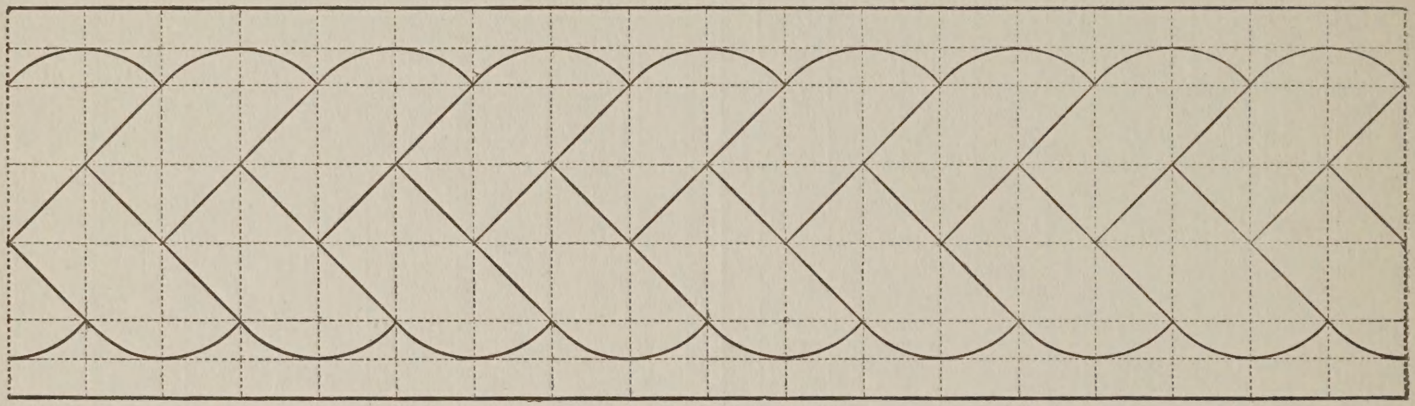


Exercise I.—Sketch the square and its diameters. Observe, in sketching the units, that the curve and the straight line flow easily into one another, thus forming an unbroken line. Sketch the central part of the unit at last,

Exercise II.—A *Border*. Sketch the marginal lines. Sketch the horizontal line, representing the stem of the leaves. Sketch the oblique lines, representing **the mid-ribs** of the leaves, and use these lines as guides in sketching the curves. Line in.

THE GUILLOCHE OR CABLE ORNAMENT.

The Guilloche or Cable Ornament is a figure formed of two or more intertwining bands.



Sketch the oblique lines first; then sketch the curves. Remember that the effect is most graceful when the straight and the curved line blend into one another like one continuous line.

CURVILINEAR PLANE FIGURES.

A **Circle** is a plane figure bounded by a curved line, all the points of which are equally distant from a point within, called the center.

An **Ellipse** is a plane figure, oblong in form, bounded by a regular curved line, which is described from two points within, called foci.

An **Oval** is a plane figure having the general shape of an egg.

DETAILS OF CURVILINEAR PLANE FIGURES.

The **Circumference** of a circle is its entire bounding line.

A **Diameter** of a circle is a straight line passing through the center and terminating at both ends in the circumference.

A **Radius** of a circle is a straight line drawn from the center to any point in the circumference.

An **Arc** of a circle is any part of the circumference.

A **Chord** is a straight line joining the extremities of an arc.

A **Segment** of a circle is the space inclosed by the arc and its chord.

A **Sector** of a circle is the space inclosed by an arc and two radii.

A **Quadrant** is a quarter of a circle or of its circumference.

A **Semicircle** is half a circle.

CURVES.

Simple Curves.—All the primary curves, as the outline of a circle or ellipse, or any part of the same, are called simple curves.

A part of a circle is also called a **circular curve.**

Compound Curves.—A compound curve is composed of two or more simple curves, so joined as to form one continuous line.

Reversed Curves.—A reversed curve is a compound curve with its parts so joined that one part curves in the opposite direction from the other part.

Balanced Curves.—Balanced curves are pairs of curves that bend equally but in opposite directions, in every part.

Spiral.—A spiral is a curve which recedes from a fixed point while winding around it. The fixed point is called the pole of the spiral. The curve which is formed by passing once around the pole is called a spire.

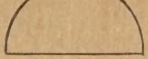
When, in a spiral, the distance between the spires is the same it is an **equable** spiral, when the distance continuously increases, a **variable** spiral.

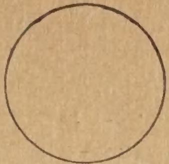
TECHNICAL TERMS.

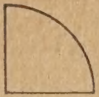
Constructing is putting together in their proper place and order the parts of a figure.

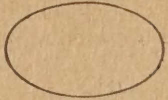
Sketching is drawing a figure in light or faint lines preparatory to lining in.

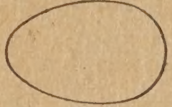
Lining in is the process of strengthening the lines of a sketch.

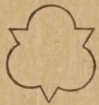

Semicircle.

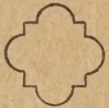

Circle.

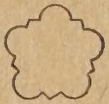

Quadrant.

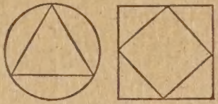

Ellipse.

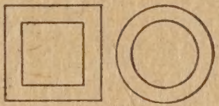

Oval.

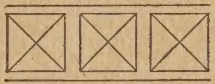

Trefoil.

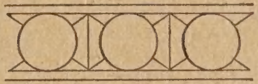

Quarterfoil.

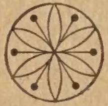

Cinquefoil.

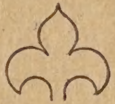

Inscribed Figures.

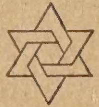

Concentric Figures.

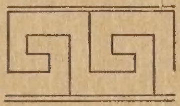

Repetition.

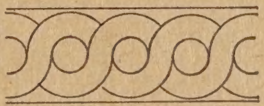

Alternation.

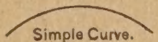

Radiation.

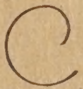

Bi-symmetry.

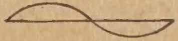

Interlacement.

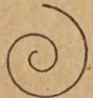

Fret.

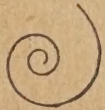

Guilloche.


Simple Curve.


Compound Curve.


Reversed Curve.


Equable Spiral.


Variable Spiral.

Blocking-out is the process of indicating the general masses and proportions of a figure.

Bisecting is dividing a line into two equal parts.

Trisecting is dividing a line into three equal parts.

Quadrisecting is dividing a line into four equal parts.

Producing is extending a line in its length.

Inscribing is drawing one figure within another so that all lines of the one terminate in the boundary of the other.

Guide-lines are lines used as helps in making a correct outline of a figure.

Intersection is the point where two lines cut or cross each other.

Outline.—The line which marks the outside of a figure; the exterior line.

Details.—The minute parts of a drawing are called its details.

Half-Tint.—A series of straight lines, parallel to each other, equally distant and of even strength.

Repetition is formed when the same ornamental figure is regularly repeated in a horizontal or vertical direction, or arranged round a center.

Unit.—A unit is the single form which is repeated.

Alternation.—Alternation is formed when two or more units are repeated by turns in regular order.

Radiation is formed when the units diverge from a common center. The outline of the whole figure is usually either that of a square, circle or regular polygon.

A **Rosette** is a radial arrangement having the general form of a rose.

A **Trefoil** is a figure having three foils or leaves, resembling three-leafed clover.

A **Quarterfoil** is a figure having four leaves or arches, resembling the petals of a flower.

A **Cinquefoil** is a figure having five leaves or arches.

Interlacement.—An interlacing ornament is composed of two or more bands which pass alternately over and under each other.

The **Guilloche** is an ornament in the form of two or more curving bands twisted over each other in a continued series.

A **Fret** is an ornament of single lines or bands forming a series of angles, usually right angles.

Bi-symmetry.—A design is bi-symmetrical when one-half of it is the exact reverse of the other.

Concentric Figures.—Two or more circles or squares are concentric when they have a common center.

Tangent Lines.—A line touching a curve at one point only, however far the line may be produced. The point of meeting is called the point of contact.

GENERAL DIRECTIONS.

Position of the Body.—The pupil should sit facing the desk, which should be of sufficient height that he may sit nearly upright. The body may incline slightly forward, but should not touch the desk. The right fore arm should rest slightly on the desk and the hand should be held nearly at right angles to the line to be drawn. The left hand or the ends of the fingers should hold the book in place.

Holding the Pencil.—The right hand should be supported by the wrist, and the third and fourth finger and the pencil should be held much as a pen in writing, but a little more upright. The pencil should be held firmly but freely, and the point should project about one inch beyond the fingers. It should never be pressed heavily on the paper, for it would hinder a free and easy motion of the hand.

Position of the Book.—The bottom of the book should be kept nearly parallel with the front edge of the desk. The book may be turned slightly to allow the free action of the arm and hand, but never turned in such a way that all strokes are made in the same direction.

The paper or drawing should be protected by the use of a blotter laid under the hand.

Rules for Sketching.—The first operation in making the outline of a drawing is to place the points which indicate the position of the principal points of the figure. These points should be thoroughly examined to ascertain that they are correctly placed. The guide lines, if there are any, should be made very light. After that is done, the design should be sketched with a well-pointed medium hard pencil. The sketch should then be carefully examined to see if it corresponds in all particulars with the copy. When satisfied as to its correctness, the guide lines should be erased. The drawing may also be rubbed lightly until it is barely visible, and then strengthened with a properly pointed pencil. The lines should be drawn clearly and firmly and they should be of equal strength. This is technically called "lining in."

As a rule the longest lines should be drawn first, then the shorter lines and the details; but the course should be such that the hand will not cover any of the lines already drawn.

In many cases it will be advisable to begin and draw the upper portion of the left side first, and to work gradually toward the lower right-hand corner. By adopting this course, the work can always be examined and compared with the copy.

In sketching *bi-symmetrical forms*, it will not be found practicable to draw all the left-hand side first and then all the right. A part of the left side, generally to a principal point, should be drawn, and while this is fresh in mind, the reversed part of the right side should be drawn.

In sketching *radial designs*, the central figure which seems to hold the parts together should be drawn first.

In sketching most of the *familiar objects*, it will generally be found best to begin by drawing the base line and the center line. After these lines are carefully drawn, the points indicating the most prominent points of the figure should be placed.

MATERIALS.

Lead Pencils.—To secure good results in free-hand drawing, a pencil is required which is free from gritty substances, uniform and carefully graded for the purpose desired.

Krone's Paragon Drawing Pencils have been particularly designed for drawing purposes and are manufactured exclusively for them by one of the best manufacturers. They are made in five grades: No. 1 (soft), No. 2 (medium soft), No. 2X (medium), No. 3 (medium hard), No. 4 (hard). For use in primary classes No. 2X or No. 3 is recommended. The wood of the pencil should be cut back about three-fourths of an inch from the point; the taper should be smooth and uniform and the lead well pointed. If the class is composed of young pupils, the pencils should be sharpened under the supervision of the teacher. Pupils of an advanced grade should be provided with two or three pencils of different grades, which they have to sharpen themselves before the commencement of the lesson. The drawing pencil should be long and should be used for drawing only.

The Eraser.—The eraser should not be kept in the hand while drawing, as the moisture of the hand will adhere to the rubber and render it unfit for use. Should the eraser become soiled, rub it briskly on rough paper.

Krone's Paragon Eraser is of the best quality. Its most convenient form will enable the pupil to erase any mark or line without endangering other parts of the work.

CONTENTS OF THE BOOKS.

Each book in the new Series of Industrial Drawing is complete in itself. It requires no manual as full directions and explanations accompany each lesson. Four pages in each book are reserved for ***exercises*** in ***drawing from memory, Dictation Exercises, Drawing from Object,*** or any lessons that the teacher may desire to give to the pupil.

Book 1 contains straight lines and applications. It teaches the angles and their applications. and introduces the square, its parts and divisions.

Book 2 reviews the elements taught in the first book, teaches the division of lines, and takes up the triangles with their applications; the Oblong and the Rhombus and their applications, both in objects and ornamental forms.

Book 3 introduces the simple curve and its application. The combination of straight and curved lines, although of the most simple character, are very instructive. The simpler principles of symmetry and radiation are illustrated in this book.

Book 4 introduces compound and reversed curves, and their applications in objects and decorative designs. It takes up the circle, its parts, divisions and applications. The construction of the Octagon and Hexagon is given, with ornamental designs based upon these forms.

Book 5, after reviewing the circle and other forms embraced in the previous book, introduces the ***Ellipse*** and the ***Pentagon*** with practical applications.

Book 6 introduces the ***Oval*** and its application in familiar objects and in decoration.

Book 7 introduces the Spirals with many examples in which these curves are found both in floral designs and in historic ornament.

Book 8 contains material for further study and practice presented in Book 7.